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Factors affecting students' attidude towards Math: ABC theory and its reflection on practice

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Abstract

This is a qualitative research aimed to find out the factors that affect on 7th grade students' attitude towards mathematics course. The present study was conducted in a public elementary school in Ankara, Keçiören district. 24 (8 sucessful, 8 average, and 8 unsucessful) 7th grade students participated in this study. Math teacher helped us selecting students based on his opinion and students' math exam results. Data collected through semi- structured interview. Eight questions were posed to students. The data were transcribed and coded by using content analysis. It was found that (a) using different materials in teaching, (b) teachers' classroom management skills, (c) teachers' content knowledge and personality, (d) teaching topics with real life enriched examples, and (e) students' opionion about mathematic courses, were the factors that affect students' attitude towards math courses. Since ABC theory is applied, it was found that students' behavior affects students emotions and thought.

Keywords: Matematic course; attitude; students; ABC theory.

1. Introduction

Nowadays teachers are under a heavy pressure due to students' national and international exams results. Turkish students are considered unsucssesful according to the ınternational exam results as well as national exam results. Mass media also approached these results as the mirror of our schools. In order to understand why our students are unsucessful at schools, much comprehensive research should be done in order to give the system feedback. This is a qualitatviev research aimed at to find out the factors that affect on 7th grade students' attitude towards mathematic course.

One of the factors that affect students' math achievement is students' attitude. Finding out students' attiude does not solve all problems. We should know the factors that affect our attitude. At that time we can manipulate/interfere the factors and as a result we can change their attitude towards positive.

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Though it may affect our behavior, our attitude shows our tendencies not directly our behavior. Attidute is generally defined by using some concepts such as our emotional content opinion, beliefs, predigeus, tendencies and evalations (Kadhiravan & Balasubramanian, 1999). Attitude tendencies either positive or negative about a person or a behavior (Koballa, 1988) can be learned through either our observations or acquired knowledge (Shrigley, Koballa & Simpson, 1988) (cf, Nuhoğlu, 2008).

Albert Ellis' Rational-Emotive Theory posits that our behavior, thought and emotions to some extend affect each other and there can be reciprocal cause-effect relationship (Ellis & Dryden, 1997). Based on this approach, in this research, it was thoght that it is important to see how students thought, behavior, and emotions affect each other in relation to math course.

The results of National diagnostic tests (SBS) show that students' achievements in math tests are very low. It was mentioned in some research results that students' math achievement affected by students attitude towards mathematics. So, the aim of this qualitative research is to find out the factors that affect 7th grade students' attitude towards mathematic course.

2. Methods

Students' attitude towards math course is mainly measured by attitude scales and it shows whether they have positive or negative attitudes. In order to explore what kinds of factors affect attitude, qualitative research method is needed.

2.1. Participants

This reserch is conducted at a public school in Ankara, Keçiören district. Students were selected based on criterion sampling (Patton, 1990; Yıldırım & Şimşek, 2005). 24 students (8 successful, 8 average, and 8 unsuccessful) from 7th grade participated in this study. The selection criteria were students' math exam results and their class teacher's observations.

2.2. Data collection

Data were collected through semi structured interview techniques. In order to establish construct validity of the interview questions, a panel of field experts was sent the questios to get their opinions. Based on their feedback, questions were finalized. All data collection porcess were recorded and short notes were taken on the interview form. Factors that affect attitude were determined based on the following indirect questions:

1. What do you think about math course? What do you feel about math course?
2. What kind of factors affects you like math course?
3. What kind of factors affect you dislike math course?
4. Do you establish connection between what you learned from math course and real life? Do yo use knowledge you get from that course directly in your life?
5. Is there anybody who affected you love/hate math courses? Who are they? How?
6. How does your teacher teach you the math course? Do the teachers use any material at his class?
7. What are your expectations from math course?
8. Did you take math exam till now? Can you give examples from those exams?

2.3. Data analysis

Data analysis process has gone through the follwing steps. First, data is read many times to understand and decide coding process. Then, data were coded. Later those codes were collected under some themes. Finally, data coded based on ABC theory. Thus, data were coded based on theoretical coding and it was vizualized.

3. Findings

Factors that affect students' attitude towards math course positively

Those factors are related to connecting math topics with real life, using materials in teaching math, teachers' personality, teachers' content knowledge, teachers' classroom management and students' opionon about math course.

Connecting math topics with real life: 5 of the seven participating students declared that math course has nothing to do with real life whereas the others said math is always a must by giving examples from real life as follows: Used in shopping (10), Geometric shapes and tools are used in real life (5), Used in calculations (3), Used in measurement (3), Used with money (2), Used in weather forecast (1). Students' statements are coming from their real life experiences and support the proximity principle in learning. Teachers are encouraged to consider these principles into account when teaching.

Using materials in teaching: 12 of the participants wished to see materials used in their classrooms. 10 of them said their teacher uses ruler, 3 of them said their teacher uses computers during their teaching. Students wish to see their teachers use materials (10) by using visuals (2), with games (2) and with more activities (2).

Teachers' personality: 12 of the participating students indicated that teachers play a crucial role in shaping students' attitude towards math. These are family (8) and friends (7). Another 5 of them emphasized teachers' effort for students to love math and 4 of them said "our teacher shows emphaty to and becomes friend with us".

Teachers' content-area knowledge: Another factor emphasized by students is related to teachers' domain knowledge and their ability in instructing in class. 18 of the students emphasized teachers' lecturing, 4 of them wanted their teachers to be good at math, and one student explained his failure due to his teacher's bad instructional practices.

Teachers' classroom management: Among the classroom management strategies, "maintaining a tranquill classroom environment" (5), "having smaller class size in each class" (4) are among the most emphasized factors.

Students' opinions about math: Successful students stated their opinions about the math class as "I like math very much" (3), "the course I like the most" (2), "it is very enjoying since we solve problems in steps" (3); average students indicated that"Since I do not understand the lesson, it is very boring and I do not like it at all" (2), "I do not like it" (2), "an enjoyable class" (4). Unsuccessful students, on the other hand, noted that "I like it when I can do the exercises" (4), "difficult but enjoyable" (4).

Factors that make students like math course: All three groups reported the same things such as "I like dealing with math," "teacher is teaching good," "course is very enjoyable," "it is a joy computing and porblem solvig."

Factors that make students dislike math course: Sucessful students reported that; I love math nothing can make be bored from math (3), Listening to teacher's boring (1), Not being able to solve problems and not being able to understand the topic well (4).

Those who are at moderate level indicated the reasons why ther are distant to math as follows: disliking math (1), Friends talking during courses (2), When I am not doing calculations (1), Having bad grade from the exam (1), Not understanding the topic (3). Those who are unsuccessful at math indicated the reasons why ther are distant to math as follows: Not liking math (2), when I am punished (1), Not understanding the topic (3), When I am not computing (2).

Albert Ellis Rational Emotive Therapy and Factors that affect students' attitude towards math courses

Based on data analysis, attitude analysis related to emotion, behavior and thought, the following findings are emerged.

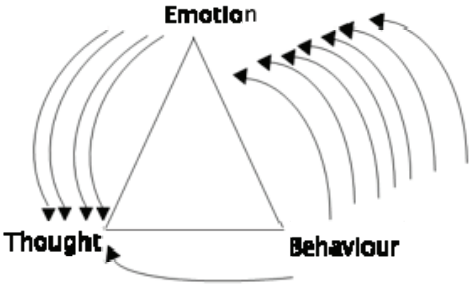

Figure 1. The interaction among the sucessful students' emotions, thought and behavior related to math course

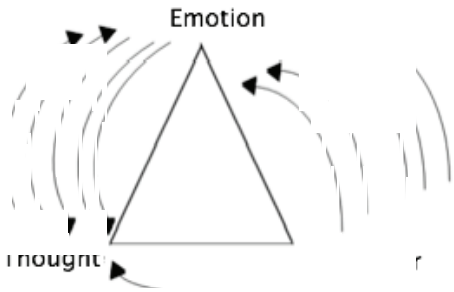

Figure 2. Average students emotions, thought and behavior related to math course

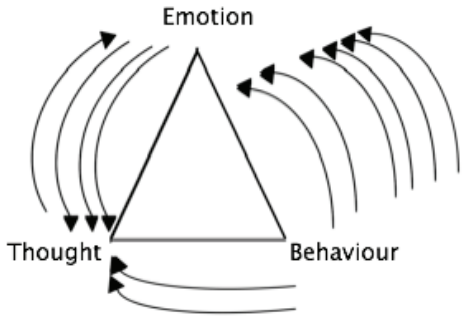

Figure 3. Unsucessful students emotions, thought and behavior related to math course

4. Discussion and Conclusion

It was found that sucessful students' emotions and thoughts about math course, as it is predicted are positive because they like the math course in general; they enjoy problem solving and calculations. Average students also found math course enjoyable unless they understand math. Unsucessful students reported their opionion differently. Some of them have found math course enjayable, but some others have not. Students who found math course enjayable said that when they understand and solve problems they enjoy the course. These findings are similar to what Alberst Ellis says: "Our behavior affects our emotions".

When students were asked what kinds of factors affect their enjoyment of math course, all three groups reported similar things that when they like dealing with math, when a teacher was teaching math well, and when they solve problems and when they are successful at calculating, they enjoy math course.

When students were asked what kinds of factors affect their dislike of math course, sucessful students mentioned that when they are not able to solve problems, when they do not understand the topic, and when the instruction is boring, they do not like math. Average students reported that they do not like math when they get bad grade from exams, when they are not able to solve problems, and do not understand the topic. Unsuccessful students say that they do not like math when the teacher punish them, and when they do not understand lesson. This shows that students' behavior and thought affect students emotions.

Students were also asked if they used math knowledge in their daily life. Some of them reported that they use math knowledge during shopping, whethear forecasting, etc. Some of them said that they did not use math in their daily lives. Most of the sucessful and average students related math topic to real life situtations however unsuccessful students did not.

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